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ABSTRACT

This paper describes a survey of 394 school principals on the East coast concerning their attitudes toward use of research information. A 15-item questionnaire was prepared to elicit responses reflecting the influence of centralization of authority, strength of knowledge base, alternative sources of information, demonstrated use of empirical information and valuation of empirical validation. Follow-up interviews were used to explain characteristics, background, and/or training of individuals that might be responsible for their variation in attitude toward empirical information. The results showed that interest in research information appears to be strongly related to personal characteristics, such as one's sense of personal efficacy. In addition, all principals in these interviews reflect a belief that scientific approaches are inappropriate when working with people. The paper concludes that training in the use of scientific rationale is necessary in leadership programs. (Author/LD)

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Antecedents to School Principals' Interest in Research Information

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Working Draft

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ANTECEDENTS TO SCHOOL PRINCIPALS' INTEREST IN RESEARCH INFORMATION

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This study focused on identification of measures of "information interest" and relationships between these measures of interest and elements of principals' background and personality which reflect training toward and valuation of empirically valid and significant knowledge.

The principalship continues to be one of the most durable and critical positions in the administration of American Schools (Goodlad, 1975; McPherson, R. S. et al., 1975; Sarason, 1973; Berman and McLaughlin, 1975). Principals are held to be the major agents of innovation, cohesiveness and integration of ideas and, as decision makers, they are called upon to use the best information available. However, the findings of educational research are not prominent among their sources of information. (Orlich, et al, 1976; Wolcott, 1973; Schubert, 1980).

The use of social science or "research" information for decision making is a complex process involving the interaction of many organizational, social and political factors. Given that this complexity and the commun-

ications obstacles to information use listed by Havelock (1973) exist, they still may not be the basal, critical barriers to effective utilization. In her cross-disciplinary analysis of the variables that explain the use of empirical information, J. Weiss (1979) reports that some of the differences in information use can be attributed to the "characteristics of major policy actors, especially their professional training." Caplan (1975) examined the consequences of training on research use at the Federal level and found that Master's level training was positively and significantly related to information use. However, his data is not broken down by occupational sectors (education, law, health, etc.) and there appears to be no documentation of an association between training and inclination toward research information in educational administration.

Weiss also notes that more of the variance in perceived contribution of science to decision making "may be chalked up to differences in the temperament of the actors." Berger and Andolina's (1976) survey of 1,000 administrators found that in education what seemed to make a difference in the research/practice relationship "is the presence and concern of one or two key people." In other words, it depends as much upon personality as it does upon role. Distinct patterns of information use have been related to personal style (Hood, 1976).

If we can infer that personal style reflects values, it is relevant to note Sharples' (1977) argument that the decision making act is ultimately dependent on the values held by the decision maker and that Hills (1978) suggests that the acquisition and utilization of specialized

knowledge and competence presupposes a commitment to the values of cognitive rationality, i.e., the valuation of empirically valid and significant knowledge.

Explanations for the intricate pattern of research information use lie in the dynamics and content of factors. One of these factors is the decision maker. If we are to understand information use in education it seems necessary to have a better description of educational leaders' valuation of empirical knowledge and of the training that they have received either as a source or result of such values. This description gains additional usefulness if the indicators (empirical valuation, training) can be shown to be associated with interest in research information.

METHODS

Published (Wolcott, 1973; Venezky, 1979) and pilot study interviews with public school principals provided statements concerning research information use which were rewritten in the form of a Likert-type questionnaire. After pilot testing, 25 items survived statistical and structural criticism. These 25 items plus requests for information on five background variables comprised the Information Use Survey. The background variables included grade levels in principal's school (a measure of organizational diversity), hours of graduate credit (training), total years as a principal (administrative experience), major under-graduate area of interest other than education and major graduate area of interest other than education. The latter two variables were intended to elicit a measure of the subjects' fundamental intellectual values as well as to be more specific indicators of the nature of their educations.

Academic area of interest (other than education) was selected as a behavioral measure of empirical valuation because it was reasoned that what a person chooses to study particularly as a "minor" reflects interests and conceptual preferences; hence, values. (cf. Gilbert, 1963; Goldman & Hudson, 1973; Tyler, 1974). Furthermore, this measure could be scaled along a humanities-sciences continuum. Disciplines such as literature, religion and the law value tradition and deduction, the sciences value empiricism and inference. "The social sciences stand midway between the sciences and the humanities, with the sciences emphasizing the context of verification and the humanities the context of discovery" (pviii, Phillips, 1978).

And finally, this measure was ideal in terms of unobtrusiveness and parsimony.

The returned questionnaire results were subjected to image analysis (Gorsuch, 1974) which identified two major attitude factors within the 25 statements. Subjects' total scores on these factor scales were calculated by summing the values of the responses on the items included in that scale. These scores were used in two ways" (1) to locate those principals with the most positive and the most negative attitudes towards research information use, and (2) as correlates with the measures of experience, education, organization and empirical valuation.

Data Source: The Information Use Survey was sent to a stratified random sample by area of school principals in New Jersey, Pennsylvania, Delaware and Maryland. Of the 642 questionnaires mailed, 394 (62%) usable forms were returned. The return rate was homogeneous for all sectors.

The sample included schools at all levels and combinations of grades K-12. Schools were coded on a 1-9 ranked scale according to grade level combinations. Graduate education and years as a principal were recorded as continous variables of reported credit hours and years. Undergraduate and graduate areas of interest were coded into five categories ranked along a continuum of empirical rationality -- liberal arts ⟷ physical sciences. For example, "religion" was coded 1 and "physics" was coded 5. The 56 unique reported areas of undergraduate interest were coded by three separate raters with an interrater reliability of .97. The procedure was repeated for graduate areas of interest with equally high interrater reliability. The coded categories are presented in Table I.

RESULTS

Questionnaire: Three orthogonal factors from the image analysis accounted for 90% of the variance, however, the third factor was not explored as it contained only 3 items with loadings greater than .40. The remaining two factors accounted for 76% of the variance. Scale 1 contains 12 items and has a Cronbach's alpha reliability of .74. Scale 2 contains 6 items and has an alpha of .66, however, according to the Spearman-Brown formula this is equivalent to an alpha of .80 with a 12 item scale.

The items which loaded on Scale 1 concern the "Practicality of Research Information" (PRI). A sample of these items is "Research studies don't deal with the nitty-gritty issues of every day life." The

mean of PRI items (2.8 on a 5 point scale) indicates that, overall, the principals find research information to be slightly above neutral in practicality. The scores on PRI correlate at an above chance level ($p < .05$) with graduate education reported. (The mean level of graduate education is 58.7 hours, SD=20.2). As hours of graduate education increases so does perception of the practicality of research information.

Scale 2 reflects an attitude centering on Utility for Administrative Decision-Making (UAD). A sample item is: "The effects of school programs and policies can be reflected in student test scores." The mean rating of UAD items (2.0 on a 5 point scale) shows that on the average these principals agree that research information has utility for administrative decision-making (SD=2.3). Scores on UAD correlate negatively and significantly with the hierarchically coded measures of undergraduate area of interest (mean=2.18, SD=1.7). Subjects whose undergraduate area of interest was in the social or "hard" sciences are more likely to have high scores on UAD than those who had distinctly liberal arts or education interests as undergraduates.

Graduate areas of interest did not correlate above chance levels with the attitude scales. The range of interests was as wide as the undergraduate but the variance was smaller.

Experience was not found to be related to information use attitude. This finding agrees with the National Occupational Analysis of School Principals (Baehr, 1975) which reported that experience was not a discriminating variable in the way principals viewed their jobs. That study did not examine education or intellectual values as characteristic variables.

Organizational structure in terms of grade level arrangement also has no effect on the attitude patterns investigated in this study. Breakdown of PRI and UAD by grade level of school shows no tendency for attitude extremes to accumulate at any particular level or type of school (PRI: chi square = 295, 324 df; UAD: chi square = 152, 171 df). When aggregated in the typical categories, the returned questionnaires were found to be from 230 elementary principals, 80 junior high or middle schools and 84 high school principals.

One recently developed approach to understanding the composition of items within an attitude measurement instrument has been the use of latent trait models (cf Summer, 1977 special issue of Journal of Educational Measurement). This theory is useful in determining what questionnaire items ought to fit together to tap a specific idea, trait or attitude. The technique it provides can be considered the initial test of construct validity.

The Rausch (Hambleton, et al, 1977; Wright & Stone, 1979) latent trait model incorporates the person's ability (attitude) plus the difficulty (intensity) of the questionnaire item. Wright's BICAL computer program for Rausch Modeling was used to test the unidimensionality of the "Practicality" attitude scale items and to calibrate them along the underlying dimension in their relative order of intensity. Table II shows how the twelve items are arranged in relation to indifference or support for a belief in the practicality of empirical information.

This table has an inverse implication. It can be read as follows: persons who are most indifferent to empirical information would agree most with "Educational research can only be used by specialists." The

other items are arranged in increasing positive contribution to the attitude through "Time limitations are a major reason school people don't use research." In short, a principal who disagreed with this last statement would be quite likely to have an overall positive view of the Practicality of Empirical Information.

Two items have "parallel forms" which obtain the same information and validate the ordering by their content similarity. "The best source of information is someone who has been in a similar situation," has the same place on the attitude dimension as "Knowing where to go comes from experience." Similarly, "There is not enough payoff for me to collect my own data." parallels "Curriculum people are the personnel most likely to use research findings."

The relative location of the items in logit units along the scale suggests that three or four more good items would enhance this scale and improve its correlation with background measures. Two additional items are needed at the positive end of the scale to which information interested individuals can agree and information aloof people will disagree. Furthermore, a smoother, more sensitive instrument will exist with two additional items between logit -0.50 and -1.70.

No items were rejected by the model, reaffirming that these existing items tap a unidimensional attitude.

Interviews: Fifteen persons at each end of the attitude continuum were selected for personal interviews. These persons were selected on the basis of their extreme scores on the two scales, with the selections verified by the presence of extreme logit scores for these same people.

The selections were stratified to select five principals from each end of the scale from three different states (PA, NJ, and DE -- Maryland returned very few extreme responses).

A 15 item questionnaire script was prepared to elicit responses reflecting the influence of centralization of authority, strength of knowledge base, alternative sources of information and demonstrated usage of empirical information and, by inference, their valuation of empirical validation.

The interview responses (1) provide the evidence to validate the selection scales with a broader range of respondent behavior and (2) give some meaning to the scale scores based on the principal's personality and the mediating variables between the personality and the empirical information use attitude.

The interviews were arranged and conducted by three different professionals to diminish the reactant effects of any particular questioning style, sex or status. The recorded interviews were transcribed and content analyzed by placing the responses in sections (Column A and Column B) according to their attitude rating. Three individual readers then underlined the comments which they believed reflected positive or negative emprical informative use attitudes, particularly valuation of empirical validation. A sample positive comment would be, "The most important part of my job is personally knowing not just what other's think is going on, but what actually is happening all the way down from curriculum to PR".

VALIDATION

Six items were selected by the judges as especially useful for validating the ability of the original questions to select principals who are indifferent to empirical information (B's) and those who are actively interested (A's).

The principals were asked if they believed there was a real and adequate knowledge base for carrying out the important functions of their job. All respondents said "yes". However, the interested (A) principals elaborated on this response by describing their strategies for accessing the knowledge. Principals at the other end of the continuum (B) say "yes" but then negate this answer by statements such as "There is knowledge available, but the quality is poor" or "There are a lot of articles written but I think the knowledge base is just common sense."

When presented with cards showing three approaches to problem-solving, the principals ranked them according to the order they believe they would be most likely to use these approaches. The two groups had a distinctly different pattern of first choices. Information Interested principals (A's) were most likely to say they would use a systematic-empirical approach. Information Indifferent principals (B's) were about equally split between a choice of social consensus and situational-intuitive. A Chi square test for homogeneity (Table III) showed this pattern of answers to be significantly different beyond a chance finding ($p < .01$).

Another question asked the principals what their sources of information were. All participants named three to six sources that they relied on but the groups differed distinctly in their referents. "A" principals named formal sources, agencies, publications, libraries, primarily writ-

ten material as their primary sources. Eighty percent of these principals remarked that they read widely -- they read everything they got their hands on. "B" principals depend primarily on verbal contacts, their friends, staff, meetings, colleagues, the central administration. "I would not go to the library, I would call someone first." Some recognize the pitfalls inherent when information comes from secondary sources but most view reality to be whatever exists in the perceptions of their sources.

When asked how confident they were of the depth and timeliness of their sources, principals' replies again different according to their placement in the attitude extremes. Information Interested (A) principals are inclined to give specific criticisms and describe how they have had to adapt or dig for the information. They sift and sort their information. "The literature is not as pragmatic as I would like. You need to abstract from it." They ask questions about sources and generalizability but do not see these problems as barriers. The aloof principals (B's) have more confidence, perhaps because as one reported "I'm reasonably confident of the information sources I use -- after all I choose them." They are confident especially where they have personal contacts with the sources -- where they are active in the professional organization or are friends with persons in knowledge production ideas.

It seemed reasonable to propose that principals who valued empirical information most highly would reflect this in the nature and quantity of information gathering activities taking place in their schools. This "hypothesis" was supported by the results of another of the interview questions. A concrete demonstration of the group differences was a comparison of the amount of things Information Interested Principals had to say about what they were doing in their schools versus the amount Information Aloof prin-

cipals talked, measured by lines of transcription. Information Interested principals talked about their projects 39% longer (54 lines vs. 33) than the Aloof principals. The "A" group participated in the standard state-wide programs but also have projects related to their own research hunches. They do personal research at the scale they are able to, they participate in evaluation and research activities whenever they can. Some have worked on Title IV development projects. Some apply for and utilize federal investigation grants.

The Information Indifferent principals (B) report that DPI or their central administration is the source of the projects they are involved with (T&E programs, Minimum Basic Skills Programs, Needs Assessment). Several are reluctant to have research conducted in their schools because it would irritate the teachers.

Finally, the principals were given an opportunity to accept or refuse an actual research finding. "A recent study by the Philadelphia Reserve Bank reports that the more principals are in the classrooms, the higher student achievement measures become. What evidence of this would you need to change routines in your school?" This interview item clearly discriminated A's from B's. Information Interested principals asked for details of the study and were able to consider the problem from a more abstract perspective and a broader range of issues. B's were doubtful of the findings without exception. They report that such a phenomenon would not be likely in their schools because of the professionalism of their teachers and because the school policies on observation are arranged so that increasing or diminishing principals observations (usually this was given a narrow definition) would not have that effect on student achievement measures.

MEANING

The second purpose of the follow-up interviews was to shed light on the characteristics, background and/or training of these individuals which might be responsible for their variation in attitude toward empirical information. All fifteen questions plus participant observation notation of ecological variables contributed data to this end.

Three questions in particular supplied insight to this very complex issue. A and B principals both gave "educationese" answers to the question regarding their perceptions of the most important part of their job. The Information Interested Principals (A) however elaborated in first person, used strong active tense sentences, emphasized a task orientation. With a few exceptions (3) these people have a sense of personal efficacy and appear to be inner directed. They gave their attention to leadership in all aspects of the job.

Information Indifferent principals generally are human relations oriented. They see themselves as part of a group or team. They are interested in climate and morale and mention the importance of following board policy and keeping the building running smoothly.

An ecological variable of note is that "A" principals appeared to have more physical energy than "B" principals although their mean ages (as assessed by their descriptions of their professional preparations) were comparable. The fact that "A" principals hold more doctorates than "B's" may be confounded by this variable rather than being a direct measure of valuation of information.

Reactions to the question asking if they thought administration was more like an art or a science were rich in description of values. All interviewwees agreed that administration is an art, however, "A" principals said that sometimes it approaches a science or "sometimes you have to be scientific" or "the trick is knowing when to use science and when not to." "B" answers were rather similar in their initial agreement that administration is an art. None of the fifteen ever mentioned operating scientifically upon occasion. The thought reflected repeatedly was that you can't be scientific because you are working with people. "The job can't be scientific because its 50% psychology."

Two-thirds of the "B" principals gave non-committal affirmative answers when asked if they wished they could be more scientific. This was not a very important issue for them. They would like to be but they were happy with the way they presently operated.

The idea that one needs to have power to operate scientifically was salient to several "A" principals. "Science is a cold type of operation, exemplified the views of "B" principals. Science and creativity were perceived to be mutually exclusive categories by the majority of the respondents.

An ecological variable that assumed considerable importance was the psychological distance a principal could occasionally place between himself and student/teacher day-to-day problems. Ordinarily, this was accomplished by utilizing assistant principals or department heads as management assistants. Principals who could examine "the big picture" were most open to empirical information. However, this interest was subdued or masked where the district had tightly centralized authority.

IMPLICATIONS

It is evident that the questionnaire has the ability to locate and classify principals according to their level of interest in empirical information. However, analysis and study of the interview data continues.

The question of whether the attitude variability makes a difference in school information gathering activities can be answered positively. A next step might be to examine relationships between ranking of the school achievement and the principal's attitude toward empirical information. What difference, if any, does being interested in empirical information have to being a good principal? The design of this evaluation clearly would have to take into account the intervening variable of centralization of authority.

Weiss (1979) noted that increased frequency of information use may happen only when arrangements for policy making change. Among these changes is the professional training of the actors. The use of systematically collected empirical information appears to require a quality of experience that supports personal exploration, experimentation and reflection. Our study indicated that for some principals this experience existed at an undergraduate level and for some it has been enhanced or is reflected by advanced graduate level academic work. The values which accompany experience in the social sciences are associated with interest in research information use; although the experiences are seldom identified as being scientific. The values of science, social and otherwise, appear to have a narrow definition.

The interviews reveal that the strength that the social or human sciences have to offer administrators need to be reemphasized and identified in training programs. Some work appears to be needed in removing the stereotype that scientific processes apply only to "the man in the white coat." Too many principals believe MBO and accountability represent the "science" of administration.

The implications for training from this line of research are weighty. In what other profession are members expected to use research findings with no training or experience with this type of thinking? There seems to be reason to believe that if education wants its leaders to use the best information available, there must be training in the valuing and use of scientific rationale in leadership training programs.

TABLE I

Classification of Area of Interest

Undergraduates:

I	II	III	IV	V
art	agriculture	business	speech/reading	biology
Bible	industrial arts	public relations	sociology	physics
English	health	criminal justice	communications	medicine
music	reading	accounting	psychology	mathematics
theatre	social studies	personnel	economics	zoology
literature	special ed.	supervision	political science	earth science
foreign languages	elementary ed.	law		
	journalism			

Graduates:

I	II	III	IV	V
philosophy	reading	labor	anthropology	research
theology	curriculum	industry	sociology	science
literature	vocational ed.	bus. adminst.	communication	chemistry
music	physical ed.	management	political science	physics
art	social studies	business	psychology	statistics
theatre	audio visual	administration		mathematics
English	counseling	supervision		environmental sciences
foreign languages	therapeutics	finance		natural sciences
humanities		foreign relations		
		law		

TABLE II

Rausch Calibration of

Practicality of Information Use Scale

Support Information Use	Logit Score	Item #	Item Text	Disagree with Item
↑	1.70	6	Time limitations are the major reason school people don't use research.	↑
	1.30	8	The principal's primary job is to keep the building running smoothly.	
	1.10	1	Research studies don't deal with the nitty gritty issues of everyday life.	
	.90	5	Knowing where to go for information comes from experience more than from education.	
	.90	14	The best source of information is someone who has been in a similar situation.	
	.50	24	Knowledge of research is a necessary precursor to planned change.	
	-.10	17	There would not be enough "payoff" for me to gather my own decision-oriented data base.	
	-.10	18	Curriculum people are the school personnel most likely to use research findings.	
	-.50	19	It is part of the principal's responsibility to train teachers to believe that testing is a source of information.	

(continued)

TABLE II

(continued)

Support Information Use	Logit Score	Item #	Item Text	Disagree with Item
↑	-1.70	16	Every problem is unique so the research studies and journal articles seldom have information I can use.	↑
	-1.90	9	Research is more helpful on staff problems than for student problems.	
	-2.30	4	Educational research can be used only by specialists	
↓ Aloof to Information Use				↓ Agree With Item

TABLE III

HOMOGENEITY OF INITIAL CHOICE OF PROBLEM-SOLVING APPROACHES

	"A" Group	"B" Group	
Systematic-Empirical	11	2	13
Intuitive-Situational	2	7	9
Social-Concensus	2	6	7
	15	15	30

Chi-Square 9.97** 2 df $p < .01$

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